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10/695,827	10/30/2003	Tetsuo Asada	117637	7178

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EXAMINER

MORRISON, THOMAS A

ART UNIT	PAPER NUMBER
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3653

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/695,827	Applicant(s) ASADA, TETSUO	
	Examiner Thomas A. Morrison	Art Unit 3653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-15 and 17-22 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,9-11,13,14 and 20-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,12,15 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The indicated allowability of claim 4 is withdrawn in view of the newly discovered reference(s) to Japanese Publication No. 6-271145. Rejections based on the newly cited reference(s) follow.

Election/Restrictions

2. In applicant's 8/10/06 response, applicant argued that, "The outstanding Office Action indicates that Fig. 2 was elected on January 26, 2005, notwithstanding Applicant's election on May 27, 2005. Because Fig. 2 was inadvertently elected, the claims were reevaluated to determine which claims actually read on elected Fig. 2. After further review, claims 1, 4, 6-8, 12, 15 and 17- 19 read on the elected Fig. 2 and claims 1 and 12 remain generic to the pending non-elected claims."

In response, claims 1, 4, 6-8, 12, 15 and 17- 19 have been examined, and claims 2-3, 9-11, 13-14 and 20-22 have been withdrawn, as directed to a non-elected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 4 and 6-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the cut sheet" in line 11. It is unclear if such cut sheet in line 11 of claim 1 is the previously recited "the cut sheet" in line 6 of claim 1, or

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the previously recited "a subsequent cut sheet" in line 9 of claim 1. This should be clear from the reading of the language of claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4 and 6-7, as best understood, are rejected under 35

U.S.C. 102(b) as being anticipated by Japanese Publication No. 6-271145.

Regarding claim 1, Figs. 1-9 and 11 show a sheet feed device (Fig. 4) including a sheet accommodating unit (1) for accommodating a plurality of cut sheets in a stacked condition;

a sheet feed roller (2) that feeds a cut sheet accommodated in the sheet accommodating unit (1), the cut sheet having a leading edge and a trailing edge defined in relation to a sheet feed direction in which the cut sheet is fed by the sheet feed roller (2),

a trailing edge detector (including 5, 6 and 9) that detects the trailing edge of the cut sheet and outputs a detection signal indicative of the detection of the trailing edge; and

a control unit (10 in Fig. 5) that determines a timing at which a subsequent cut sheet is fed out by the sheet feed roller (2) based on the detection, wherein the trailing edge detector (including 5, 6 and 9) comprises a conversion mechanism (including 5)

that converts movement of the cut sheet into rotations. See also numbered paragraphs [0015], [0021] and [0025] – [0038] of the English translation of Japanese Publication No. 6-271145 submitted with applicant's 4/22/05 IDS. With regard to the trailing edge detector limitation, pulses from the sensor (including 5, 6 and 9) are used to track the location of the cut sheet as the cut sheet is being fed. In other words, the locations of the leading and trailing edges are known for the sheet. In as much as the trailing edge sensor of the instant application uses pulses from a rotary device to determine the position of the cut sheet as it is being fed, so does the sensor (including 5, 6 and 9) of Japanese Publication No. 6-271145.

Regarding claim 4, Figs. 1-9 and 11 show that the sheet feed roller (2) has a rotational shaft (3) to be rotatable with the sheet feed roller (2), and the trailing edge detector (including 5) is coaxially attached to the rotational shaft (3).

Regarding claim 6, Figs. 1-9 and 11 show that the sheet feed roller (2) has a rotational shaft (3) to be rotatable with the sheet feed roller (2), and the trailing edge detector (including 5, 6 and 9) is operatively coupled to the rotational shaft (3).

Regarding claim 7, Figs. 1-9 and 11 show that the trailing edge detector (including 5, 6 and 9) comprises a disk (5) coaxially attached to the rotational shaft (3), and a rotation sensor (6) that detects rotations of the disk (5).

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5. Claim 1, as best understood, is rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Publication No. 9-58903.

Regarding claim 1, Figs. 1-5 and the English Abstract of Japanese Publication No. 9-58903 submitted with applicant's 4/22/05 IDS disclose a sheet feed device (Fig.

1) including

a sheet accommodating unit (4) for accommodating a plurality of cut sheets in a stacked condition;

a sheet feed roller (2) that feeds a cut sheet (P) accommodated in the sheet accommodating unit (4), the cut sheet (P) having a leading edge and a trailing edge defined in relation to a sheet feed direction in which the cut sheet (P) is fed by the sheet feed roller (2),

a trailing edge detector (including 9) that detects the trailing edge of the cut sheet (P) and outputs a detection signal indicative of the detection of the trailing edge; and

a control unit (English Abstract) that determines a timing at which a subsequent cut sheet is fed out by the sheet feed roller (2) based on the detection, wherein the trailing edge detector (including 9) comprises a conversion mechanism (9) that converts movement of the cut sheet into rotations.

6. Claim 1, as best understood, is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,964,460 (Azumi et al.).

Regarding claim 1, Figs. 2-3 and Columns 1-2 disclose a sheet feed device (Fig.

2) including

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a sheet accommodating unit (108) for accommodating a plurality of cut sheets in a stacked condition;

a sheet feed roller (112) that feeds a cut sheet (105) accommodated in the sheet accommodating unit (108), the cut sheet (105) having a leading edge and a trailing edge defined in relation to a sheet feed direction in which the cut sheet (105) is fed by the sheet feed roller (112),

a trailing edge detector (115 and 116) that detects the trailing edge of the cut sheet (105) and outputs a detection signal indicative of the detection of the trailing edge; and

a control unit (column 2, lines 25-36) that determines a timing at which a subsequent cut sheet is fed out by the sheet feed roller (112) based on the detection, wherein the trailing edge detector (115 and 116) comprises a conversion mechanism (115) that converts movement of the cut sheet into rotations (i.e., rotations of element 115).

7. Claims 1 and 12, as best understood, are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,485,011 (Yen et al.).

Regarding claim 1, Figs. 1A-1B show a sheet feed device (10) including

a sheet accommodating unit (11) for accommodating a plurality of cut sheets (S1 and S2) in a stacked condition;

a sheet feed roller (21) that feeds a cut sheet (S1) accommodated in the sheet accommodating unit (11), the cut sheet (S1) having a leading edge and a trailing edge

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defined in relation to a sheet feed direction in which the cut sheet (S1) is fed by the sheet feed roller (21);

a trailing edge detector (25) that detects the trailing edge of the cut sheet (S1) and outputs a detection signal indicative of the detection of the trailing edge; and

a control unit (26) that determines a timing at which a subsequent cut sheet (S2) is fed out by the sheet feed roller (21) based on the detection, wherein the trailing edge detector (25) comprises a conversion mechanism (*micro switch*) that converts movement of the cut sheet into rotations. See also column 3, lines 48-64 and column 4, lines 23-29 for explanation of controller 26.

Regarding claim 12, Figs. 1A-1B show a sheet feed device (10) including

a sheet accommodating unit (11) for accommodating a plurality of cut sheets (S1 and S2) in a stacked condition;

a first roller (21) that feeds a cut sheet (S1) accommodated in the sheet accommodating unit (11), the cut sheet (S1) having a leading edge and a trailing edge defined in relation to a sheet feed direction in which the cut sheet (S1) is fed by the first roller (21);

a trailing edge detector (25) that detects the trailing edge of the cut sheet and outputs a detection signal indicative of the detection of the trailing edge;

a second roller (23) disposed downstream of the first roller (21) with respect to the sheet feed direction, wherein the second roller (23) starts conveying the cut sheet when the first roller (21) stops feeding the cut sheet (S1), and the trailing edge detector

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(25) starts detecting the trailing edge of the cut sheet (S1) when the first roller (21) stops feeding the cut sheet (S1); and

a control unit (26) that determines a timing at which a subsequent cut sheet (S2) is fed out by the first roller (21) based on the detection, wherein the trailing edge detector (25) comprises a conversion mechanism (*micro switch*) that converts movement of the cut sheet into rotations. See column 3, lines 48-64 for explanation of controller 26, and also see column 4, lines 16-38 for an explanation of the stopping of the first roller 21, the starting of the second roller 23, the detecting of the trailing edge, and the feeding of a subsequent cut sheet.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 and 12, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,194,970 (Iwanade) in view of U.S. Patent No. 5,964,460 (Azumi et al.).

Regarding claim 1, Fig. 3 of Iwanade shows a sheet feed device including a sheet accommodating unit (2) for accommodating a plurality of cut sheets (1) in a stacked condition;

a sheet feed roller (4) that feeds a cut sheet (1) accommodated in the sheet accommodating unit (2), the cut sheet (1) having a leading edge and a trailing edge

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defined in relation to a sheet feed direction in which the cut sheet (1) is fed by the sheet feed roller (4);

a trailing edge detector (7) that detects the trailing edge of the cut sheet (1) and outputs a detection signal indicative of the detection of the trailing edge; and

a control unit (10) that determines a timing at which a subsequent cut sheet (1) is fed out by the sheet feed roller (4) based on the detection. See, e.g., column 4, lines 61-64 and column 5, lines 45-59.

Regarding claim 12, Fig. 3 of Iwanade shows a sheet feed device including a sheet accommodating unit (2) for accommodating a plurality of cut sheets (1) in a stacked condition;

a first roller (4) that feeds a cut sheet (1) accommodated in the sheet accommodating unit (2), the cut sheet (1) having a leading edge and a trailing edge defined in relation to a sheet feed direction in which the cut sheet (1) is fed by the first roller (4);

a trailing edge detector (7) that detects the trailing edge of the cut sheet (1) and outputs a detection signal indicative of the detection of the trailing edge;

a second roller (30 or 5) disposed downstream of the first roller (4) with respect to the sheet feed direction, wherein the second roller (30 or 5) starts conveying the cut sheet (1) when the first roller (4) stops feeding the cut sheet (1)(see, e.g., column 3, lines 52-58 and column 4, lines 31-47), and the trailing edge detector (7) starts detecting the trailing edge of the cut sheet (1) when the first roller (4) stops feeding the cut sheet (1)(see, e.g., Fig. 4, steps S14-S16); and

a control unit (10) that determines a timing at which a subsequent cut sheet (1) is fed out by the first roller (4) based on the detection. See, e.g., column 4, lines 61-64 and column 5, lines 45-59.

With regard to claims 1 and 12, the Iwanade patent discloses a trailing edge detector (7), but does not specifically disclose the type of detector. As such, Iwanade does not specifically disclose that the trailing edge detector (7) has a conversion mechanism that converts movement of the cut sheet into rotations. The Azumi et al. patent discloses that it is well known to provide a sheet feeding device (Fig. 2) with a trailing edge detector (115) that has a conversion mechanism (i.e., pivot lever 115) that converts movement of a cut sheet (105) into rotations, for the purpose of accurately detecting the passing of the trailing edge of the cut sheet by physically touching the actual sheet that is conveyed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the apparatus of Iwanade with a trailing edge detector (115) that has a conversion mechanism (i.e., pivot lever 115) that converts movement of a cut sheet (105) into rotations, for the purpose of more accurately detecting the passing of the trailing edge of the cut sheet by physically touching the actual cut sheet as it is conveyed, as taught by Azumi et al. See e.g., columns 1-2 and Figs. 2-3 of Azumi et al.

9. Claims 4, 6-7, 15 and 17-18, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over the Iwanade patent as applied to claims 1 and 12 above, and further in view of Japanese Publication No. 6-271145.

Fig. 3 of Iwanade shows the trailing edge detector (7) and a feed roller (4) that inherently has some sort of a rotation shaft, but does not specifically show a trailing edge detector arrangement, as set forth in claims 4, 6-7, 15, and 17-18.

With regard to claims 4, 6-7, 15, and 17-18, Figs. 1-9 and 11 of Japanese Publication No. 6-271145 disclose that it is well known to provide a sheet feeding device (Fig. 4) with a trailing edge detector (including 5, 6 and 9) that has a disk (5) attached to a rotation shaft and a sensor (6) to accurately determine the location of the sheet by tracking the actual feeding device (i.e., feed roller 2) that is feeding the cut sheet, for the purpose of accurately controlling the operation of a downstream conveyance member. See, e.g., numbered paragraphs [0015], [0021] and [0025] – [0038] of the English translation of Japanese Publication No. 6-271145 submitted with applicant's 4/22/05 IDS. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the trailing edge detector (7) of Iwanade with a trailing edge detector having a disk attached to the rotation shaft of the feed roller, for the purpose of more accurately determining the location of the sheet via tracking of the actual feeding device, as taught by Japanese Publication No. 6-271145. In as much as the trailing edge sensor of the instant application uses pulses from a rotary device to determine the position of the cut sheet as the cut sheet is being fed, so does the sensor (including 5, 6 and 9) of Japanese Publication No. 6-271145.

With regard to claims 4 and 15, providing a trailing edge detector on the Iwanade apparatus, in a manner as taught by Japanese Publication No. 6-271145, will result in the sheet feed roller/first roller (4) of Iwanade having the trailing edge detector (including

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5) coaxially attached to the rotational shaft. See e.g., Figs. 1-9 and 11 of Japanese Publication No. 6-271145.

With regard to claims 6 and 17, providing the trailing edge detector on the Iwanade apparatus, in a manner as taught by Japanese Publication No. 6-271145, will result in the sheet feed roller/first roller (4) of Iwanade having the trailing edge detector (including 5) operatively coupled to the rotational shaft.

With regard to claims 7 and 18, providing the trailing edge detector on the Iwanade apparatus, in a manner as taught by Japanese Publication No. 6-271145, will result in the trailing edge detector (including 5, 6 and 9) comprising a disk (5) coaxially attached to the rotational shaft, and a rotation sensor (6) that detects rotations of the disk (5).

Response to Arguments

10. Applicant's arguments with respect to claims 1 and 12 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

11. Claims 8 and 19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. 5,393,045, 5,938,188 and 6,409,165 each

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show *micro switches* that comprise a conversion mechanism to convert movement of a sheet into rotations.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas A. Morrison whose telephone number is (571) 272-7221. The examiner can normally be reached on M-F, 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Mackey can be reached on (571) 272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10/25/2006


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